

PRE-CONSTRUCTION SURVEY PLAN FOR SPECIAL STATUS PLANTS BIG SANDY ENERGY PROJECT

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1.0 INTRODUCTION

As part of the baseline studies associated with the proposed Big Sandy Energy Project, vegetation surveys were conducted in the Spring and Summer of 2000. Results of these efforts are presented in the Big Sandy Energy Project Vegetation Technical Report (September 2000). No special status species were observed; however, detailed surveys of all potential disturbance areas have not been completed. Pre-construction surveys would be conducted to identify suitable habitat for sensitive plant species. In habitat that could not be avoided, surveys would be conducted to identify any populations of individual sensitive plant species. Vegetation community information from the previous survey will support pre-construction surveys. A survey will coincide with the appropriate flowering periods for the plant species listed below. The specific timing will be dependant on weather and rainfall in the project area.

The project area has Sonoran and Mohave desertscrub habitats, riparian vegetation along the Big Sandy River and several surrounding washes, and a small portion of Great Basin conifer woodland. The entire project area, including the proposed and alternative gas pipeline routes, has elevations ranging from 1,800 to 3,800 feet.

2.0 FEDERALLY LISTED SPECIES

Arizona cliffrose (*Purshia subintegra*) is a federally endangered species in the Rosaceae family. It is the only federally listed plant species that may occur in the project area. There are known occurrences in four sites across central Arizona, in the following counties: Mohave, Graham, Yavapai, and Maricopa. Arizona cliffrose occurs on limy tuff soils of freshwater lakebed deposits on rolling hills of the Sonoran desert, at elevations between 2,000 and 3,500 feet. It is an evergreen shrub 1.5 to 1.8 meters tall with gray shreddy bark, and soft dense white hairs covering the leaves, twigs, and flowers. White or yellow petals, one inch long, occur on each flower from April to June. The closest confirmed occurrence to the project area is near Burro Creek at Six Mile crossing (ADOT 2000). The Big Sandy Project will not affect the existing population at Burro Creek.

3.0 ARIZONA STATE LISTED SPECIES

Thorn milkwort (*Polygala acanthoclada*) is in the Polygalaceae family. It occurs in Navajo, eastern and northern Coconino, and southwestern Yavapai counties, at 2,500 to 5000 feet. This shrubby species grows up to 3 feet high, tending to form hummocks. It is intricately branched with small, yellow flowers appearing in June. There are no known occurrences of thorn milkwort in the project area.

Arizona necklace (*Sophora arizonica*) is a legume that is known only from western Arizona. It occurs southeast of Yucca (Mohave County), in the foothills of Hualapai Mountains. This

species is shrubby, up to 3.5 m high, with leaflets usually less than 10mm. The lilac-colored flowers appear in March. It is known to occur along the Big Sandy River at elevations between 2,000 and 4,000 feet on dry rocky hillsides and on banks of arroyos.

Linear-leaf sand spurge (*Stillingia linearifolia*) is a perennial species in the Euphorbiaceae family. This species has linear leaves, and highly branching stems from a stout woody root. It flowers in April and October. It has been documented near Yucca and Topock (Mohave County), western Pima and southern Yuma counties at 500 to 2,000 feet. An individual plant was found and flagged during the design of the Big Sandy Bridge replacement (ADOT 2000).

Sand cholla (*Opuntia pulchella*) is an Arizona state-listed cactus. This species grows in a clump from a bristled-covered tuber, favoring higher elevation dry-lake borders and sandy flats. It is located in the northern Mojave Desert from eastern California to southern Utah from 4,400 to 5,000 feet. It grows up to 10 inches in height, narrowly club-shaped to cylindrical. The flowers are pink to purple and appear April to June. The yellow-green flattened but slender stems are about one inch in diameter, and the smooth, red fruit is fleshy and barbed, up to 1 inch long. This species does not occur in the elevation range of the project area and will not be included in pre-construction surveys.

4.0 BLM SENSITIVE SPECIES

The following sensitive species were identified by the BLM as potentially occurring within the project area (BLM 2000). All species that were considered by the BLM are addressed below; further research has eliminated some species due to habitat requirements. Unless specified, there are no known locations of these species in the project area; however presence or absence surveys are required.

4.1 BLM Sensitive Species with Potential to Occur within the Project Area

Aquarius milkvetch (*Astragalus Newberryi* var. *aquarii*) is a legume species found in Apache to Mohave, Gila, and Yavapai counties. This species occurs at 2,000 to 7,000 feet in dry stony mesas and lakebed deposits. It flowers in March and April and produces pods with long soft hairs. There

Parish phacelia (*Phacelia parishii*) is in the Hydrophyllaceae family. It occurs in clay or alkaline soils, in dry lake margins 2,600 to 3,900 feet. It is an annual that stands 5-15 cm with basal elliptic leaves. The species has bell-shaped yellow/lavender flowers.

Three hearts (*Tricardia watsonii*) is also in the Hydrophyllaceae family. Three hearts occurs on sandy or gravelly desert slopes, generally in the shelter of shrubs. It is a perennial species with stems branching from a woody taproot. The leaves are entire and mostly basal. White and purple flowers appear in short racemes in April. Known occurrences are in northwestern Mohave County at about 2,000 feet.

California flannelbush (*Fremontodendron californica*) is in the Sterculiaceae family. Known occurrences are in Yavapai and Gila counties. It occurs in oak pine woodlands, rocky ridges, and usually north slopes in canyons 1,300 to 6,500 feet. This species is a large evergreen shrub or small tree, with thick leaves that are usually palmately lobed. Solitary showy flowers with bright yellow (sometimes orange) sepals appear in May.

4.2 BLM Sensitive Species Not Expected to Occur Within the Project Area

Aravaipa woodfern (*Thelypteris puberla* var. *sonorensis*) is a woodland fern that occurs along streams and seepage areas 200 to 1,800 feet. Its blade is widest at or near base. The fern is found near the Santa Maria River (Southwestern Yavapai County), Aravaipa Canyon (Graham and Pinal Counties), and Santa Catalina Mountains (Pima county). This species is on the lower end of the elevation range of the project area and is not expected to be encountered.

5.0 NATIVE PLANT SALVAGE

A reclamation and salvage plan will be developed for the project area. Detailed transplant methodology will be developed. Seed mixes and rates will also be specified to mimic the natural environment. The plan will include long-term monitoring of reclaimed areas. The plan will provide for species on the Arizona Department of Agriculture List of Protected Native Plants (State of Arizona 1999). No *Highly Safeguarded* plants from the list were observed in the project area during the previous vegetation survey. However, several *Salvage Restricted* native plants occur along the construction ROW. It is required by the Arizona Native Plant Law that permits be acquired to salvage these species (State of Arizona 1997). Pre-construction surveys will allow for these species to be flagged, and if necessary, removed to temporary nurseries. The species listed in Table 1 are Salvage Restricted species that were observed on site visits to the projects area.

Table 1 Cacti and other succulent species occurring in the project area that will be salvaged	
Common Name	Scientific Name
Barrel Cactus	<i>Ferocactus cylindraceus</i>
Engelmann hedgehog cactus	<i>Echinocereus engelmannii</i>
Ocotillo	<i>Fouquieria splendens</i>
Banana yucca	<i>Yucca baccata</i>
Mohave yucca	<i>Yucca schidigera</i>
Silver cholla	<i>Opuntia echinocarpa</i>
Beavertail cactus	<i>Opuntia basilaris</i>
Buckhorn cholla	<i>Opuntia acanthocarpa</i>
Teddy-bear cholla	<i>Opuntia bigelovii</i>
Christmas cholla	<i>Opuntia leptocaulis</i>
Engelmann prickly pear	<i>Opuntia engelmannii</i>
Arizona Fishhook cactus	<i>Mammillaria microcarpa</i>
Diamond cholla	<i>Opuntia ramosissima</i>
Prickly pear	<i>Opuntia erinacea</i>

6.0 REFERENCES

- Arizona Department of Transportation (ADOT). June 2000. Draft Environmental Assessment for US 93 Design Concept Study (Wikieup to Interstate 40). Phoenix, Arizona.
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